

GETTING STARTED



CHAPTER 1

In this Chapter...

Introduction.....	1-2
Conventions Used.....	1-3
Product Overview - EA1-T4CL.....	1-4
Product Overview - EA1-T6CL.....	1-5
Agency Approvals.....	1-5
Part Number Key.....	1-6
Product Label Examples.....	1-6
Serial Number and Date Code format.....	1-6
Quick Start Steps	1-7
Step 1 – Unpack and Inspect.....	1-7
Step 2 – Install Optional Hardware Accessories (EA1-T6CL).....	1-8
Step 3 – Become Familiar with Available Communication Ports.....	1-9
Step 4 – Install C-more Color Micro-Graphic Panel.....	1-10
Enclosure Clearances.....	1-12
Step 5 – Install the Programming Software and Develop a Project.....	1-13
Step 6 – Connect C-more Color Micro-Graphic Panel to Computer.....	1-14
Step 7 – Providing Power to the C-more Color Micro-Graphic Panel.....	1-15
Step 8 – Accessing the C-more Color Micro-Graphic Panel Setup Screens.....	1-16
Step 9 – Choose C-more Color Micro-Graphic Panel to PLC Protocol & Cables.....	1-17
Step 10 – Connect C-more Color Micro-Graphic Panel to PLC.....	1-18

Introduction

1

The Purpose of this Manual

Thank you for purchasing from our *C-more*[®] Micro-Graphic family of products. This manual describes *AutomationDirect.com's C-more* Color Micro-Graphic panels, specifications, included components and available accessories and provides you with important information for installation, connectivity and setup. The manual shows you how to install, wire and use the products. It also helps you understand how to interface the panels to other devices in a control system.

This user manual contains important information for personnel who will install the panels and accessories, and for the personnel who will be programming the panel. If you understand control systems making use of operating interfaces such as the *C-more* Micro-Graphic panels, our user manuals will provide all the information you need to get, and keep, your system up and running.

Supplemental Manuals

If you are familiar with industrial control type devices, you may be able to get up and running with just the aide of the Quick Start Guide that is included with each panel. You may also refer to the online help that is available in the *C-more* Micro-Graphic programming software.

Technical Support

We strive to make our manuals the best in the industry. We rely on your feedback to let us know if we are reaching our goal. If you cannot find the solution to your particular application, or, if for any reason you need technical assistance, please call us at:

770-844-4200

Our technical support group will work with you to answer your questions. They are available Monday through Friday from 9:00 A.M. to 6:00 P.M. Eastern Time. We also encourage you to visit our web site where you can find technical and non-technical information about our products and our company.

<http://c-moremicro.automationdirect.com>

Conventions Used



When you see the “notepad” icon in the left-hand margin, the paragraph to its immediate right will be a special note. The word **NOTE:** in boldface will mark the beginning of the text.



When you see the “exclamation mark” icon in the left-hand margin, the paragraph to its immediate right will be a warning. This information could prevent injury, loss of property, or even death (in extreme cases). The word **WARNING:** in boldface will mark the beginning of the text.

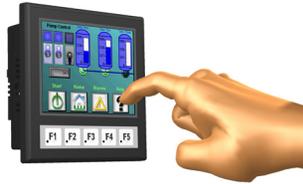
Key Topics for Each Chapter

The beginning of each chapter will list the key topics that can be found in that chapter.

Getting Started	
	
In This Chapter...	
General Information	1-2
Specifications	1-4

Product Overview - EA1-T4CL

1



EA1-T4CL

The C-more 4" Color Micro-Graphic panel has a 4.1-inch TFT LCD color 320 x 240 dot display with an LED backlight. It features five user-defined function keys, each key with a user-defined red LED indicator. The panel displays up to 40 lines by 80 characters of static text and up to 30 lines by 40 characters of dynamic text with embedded variables and phrases mixed with graphics at landscape orientation. Portrait orientation can display 60 characters and 53 lines of static text and 40 lines by 40 characters of dynamic text. EA1-T4CL is rated UL for use on a flat surface of Type 4X enclosure (for **indoor** use only). The C-more 4" Micro-Graphic panels are powered from a 12-24 VDC class 2 power supply during operation, or can be powered in low power mode through the USB port from a PC during programming.

Other features include:

- 3276 KB memory
- USB Type B programming port.
- Built in 15-pin serial communications port (RS-232/422/485)
- Optional replaceable clear screen overlay
- Built in Alarm Control setup that activates beep, backlight flash, customized alarm banner, and red LED blinking
- Up to 999 screens, limited only by memory usage
- 0 to 50 °C (32 to 122 °F) operating temperature range
- UL, cUL, CSA & CE agency approvals (see next page for details)
- 2-year warranty from date of purchase

Product Overview - EA1-T6CL



EA1-T6CL

shown in Landscape (Horizontal) mode



EA1-T6CL

shown in Portrait (Vertical) mode

The *C-more* 6" Color Micro-Graphic panel has a 5.7-inch TFT LCD color 320 x 240 dot display with an LED backlight. It features five user-defined function keys, each key with a user-defined red LED indicator. The panel displays up to 40 lines by 80 characters of static text and up to 40 lines by 40 characters of dynamic text with embedded variables and phrases mixed with graphics at landscape orientation. Portrait orientation can display 60 characters and 53 lines of static text and 40 lines by 40 characters of dynamic text. EA1-T6CL is rated UL for use on a flat surface of Type 1, 4X enclosure (for indoor use only). The *C-more* 6" Micro-Graphic panels are powered from a 12-24 VDC class 2 power supply during operation, or can be powered in low power mode through the USB port from a PC during programming.

Other features include:

- 3276 KB memory
- USB Type B programming port.
- Built in 15-pin serial communications port (RS-232/422/485)
- 2 optional keypad bezels, 20-button landscape and 21-button portrait mount
- Optional replaceable clear screen overlay
- Built in Alarm Control setup that activates beep, backlight flash, customized alarm banner, and red LED blinking
- Up to 999 screens, limited only by memory usage
- 0 to 50 °C (32 to 122 °F) operating temperature range
- UL, cUL, CSA & CE agency approvals (see below for details)
- 2-year warranty from date of purchase

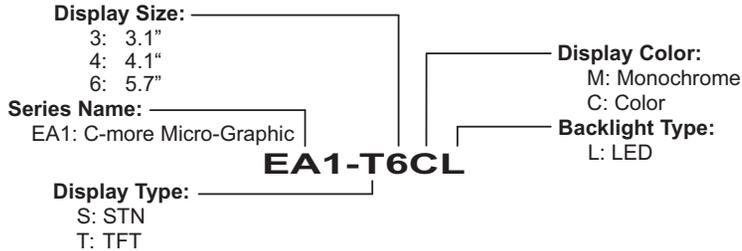
UL/CUL/CE Certification Numbers					
Name	UL/CUL	UL508	CSA	CE	ISO-9000
C-more Micro-Graphic Panels & Accessories	E157382	E157382	234884	EN61131-2	Yes

Agency Approvals   

Part Number Key

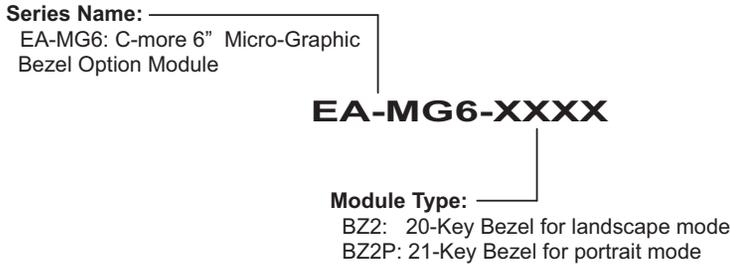
Panel Part Number Key

The *C-more* Micro-Graphic panel part numbers consist of the following:

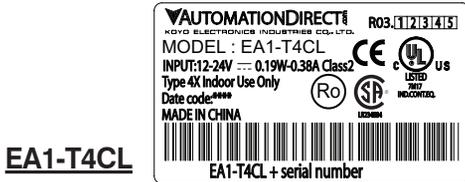


Bezel Part Number Key

The optional *C-more* 6" Micro-Graphic keypad bezel part numbers consist of the following:



Product Label Examples



Serial Number and Date Code format

Serial Number = [Part Number]+[YYMDDFNNN]

- YY: Year (07–99 --- e.g. 07 = 2007)
- M: Month (1–9, X, Y, Z --- e.g. X = Oct.)
- DD: Day (1–31)
- F: Manufacturing Site (0–9, A–Z)
- NNN: Sequence number for the date listed (000–999)

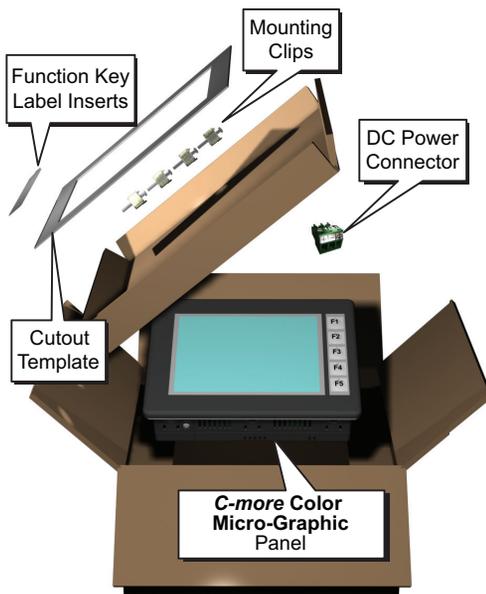
Date Code = **YMMF**

- Y: Year (0–9 --- e.g. 07 = 2007)
- MM: Month (01–12 --- e.g. X = Oct.)
- F: Manufacturing Site (0–9, A–Z)

Quick Start Steps

Step 1 – Unpack and Inspect

- a.) Unpack the *C-more* Color Micro-Graphic panel from its shipping carton. Included in the carton are the following:
- *C-more* Color Micro-Graphic panel
 - DC power connector
 - cutout template
 - mounting clips
 - gasket
 - function key label inserts
 - Quick Start Guide

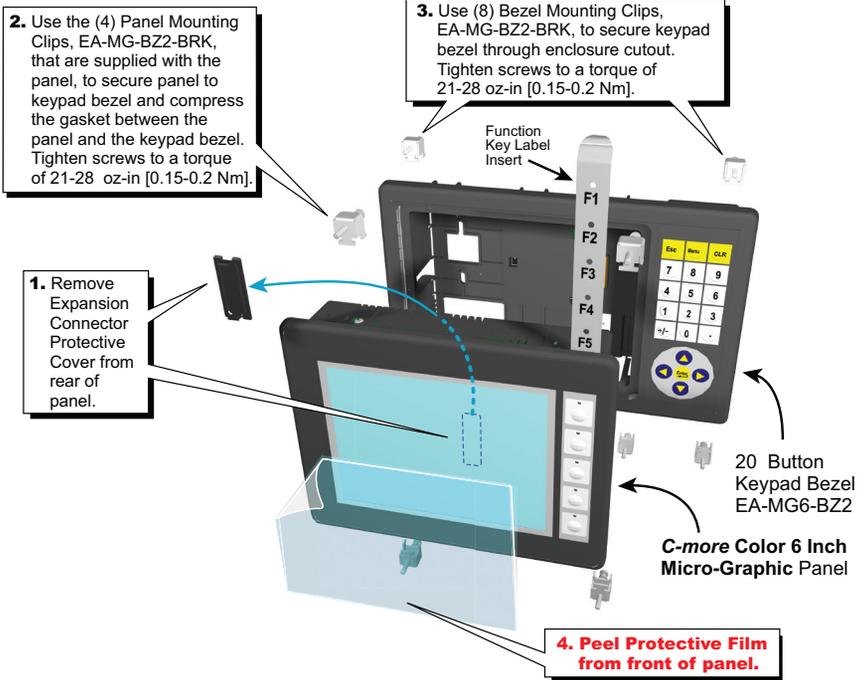


Shipping Carton Contents

- b.) Unpack any accessories that have been ordered, such as: Keypad Bezel, programming cable, PLC communications cable, etc.
- c.) Inspect all equipment for completeness. If anything is missing or damaged, immediately call the *AutomationDirect*[®] returns department @ 1-800-633-0405.

Step 2 – Install Optional Hardware Accessories (EA1-T6CL)

The *C-more* 6" Micro-Graphic panel can be mounted in an optional 20 or 21 button keypad bezel. Below is an example of a *C-more* 6" Micro-Graphic panel being assembled with the optional EA-MG6-BZ2 20-button Keypad Bezel.



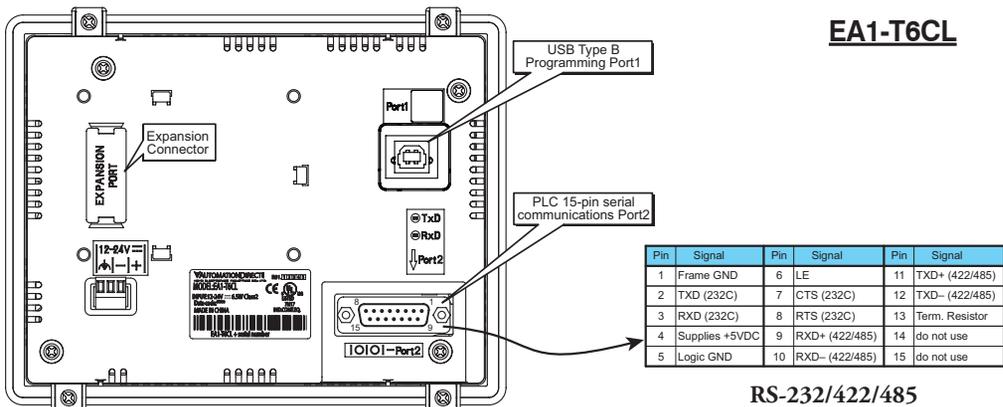
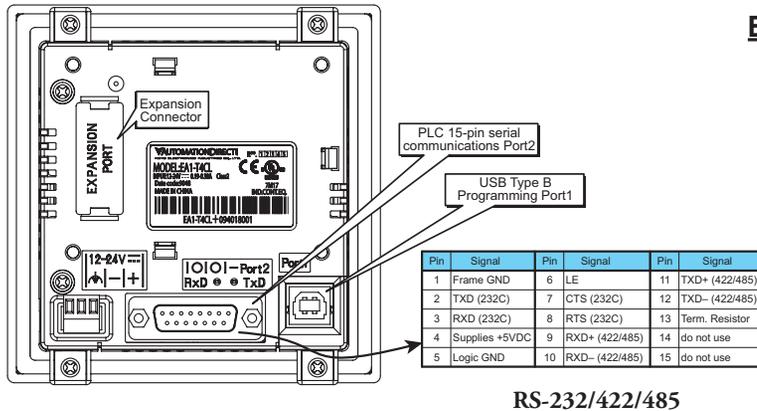
NOTE: Mounting clips for the panel and keypad bezels are included with the respective product.

Step 3 – Become Familiar with Available Communication Ports

The *C-more* Color Micro-Graphic panel includes a built-in USB Type B port used to communicate with a PC during project development. There is a 15-pin RS-232/RS-422/RS-485 port for communications to a PLC.



NOTE: When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in **Low-Power Mode**. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness.



NOTE: See Chapter 2: Specifications and Chapter 6: PLC Communications for additional details on the available communication ports, protocols and cables.

Step 4 – Install *C-more* Color Micro-Graphic Panel

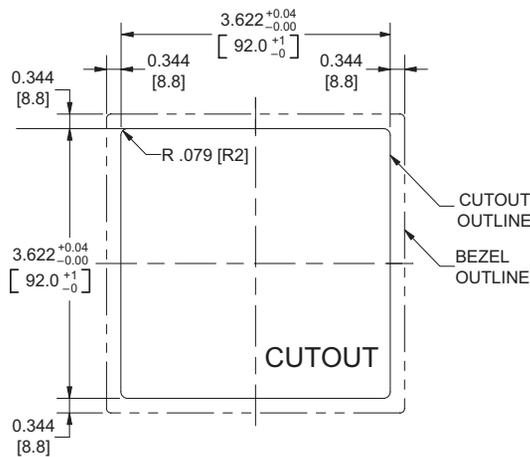
The *C-more* Micro-Graphic panel can be mounted through a cutout in an enclosure by using the template that is provided with the panel, or using the dimensions that follow. Cutout dimensions for the *C-more* 6" Color Micro-Graphic panel 20-button landscape and 21-button portrait keypad bezel options are also shown on the next page. The keypad bezels also include a template that can be used.

The enclosure mounting thickness range for the panels and the keypad bezels is 0.04"–0.2" [1–5 mm].

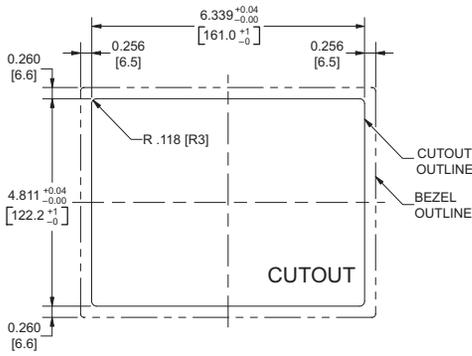
The screw torque range for the screws used on the panel mounting clips and the keypad bezel mounting clips is 21–28 oz-in [0.15–0.2 Nm].

See **Chapter 2: Specifications** for additional product dimensions and **Chapter 3: Accessories** for accessory specifications and dimensions.

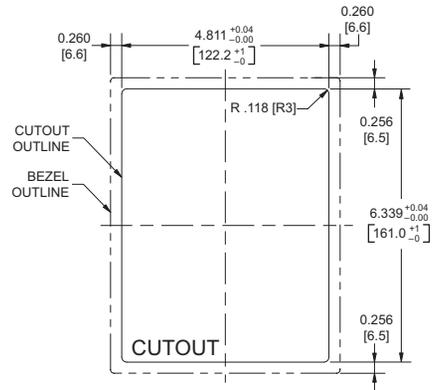
EA1-T4CL **Panel Cutout**



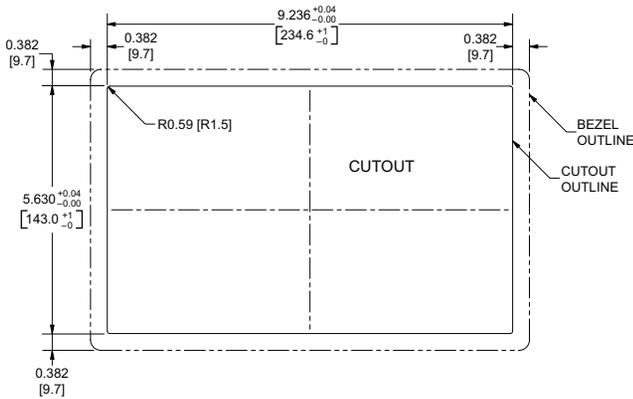
EA1-T6CL
Panel and Accessories Cutouts



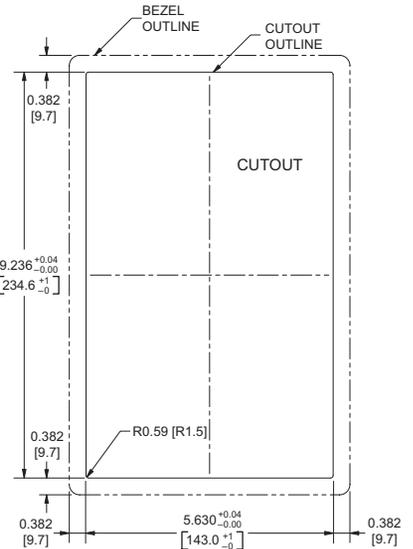
Landscape Mode (Horizontal)



Portrait Mode (Vertical)



EA-MG6-BZ2
Landscape (Horizontal)
Keypad Bezel Cutout

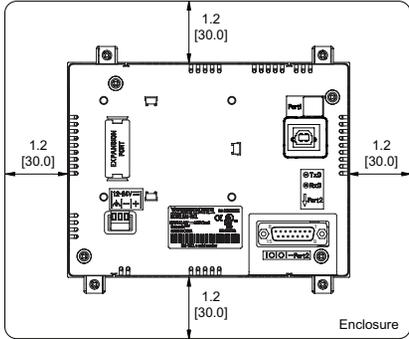


EA-MG6-BZ2P
Portrait (Vertical)
Keypad Bezel Cutout

Enclosure Clearances

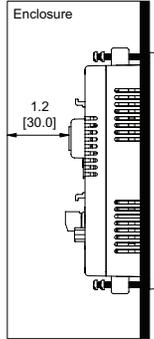
In all installations, a 1.2" [30mm] minimum clearance is required inside an enclosure for proper ventilation of the *C-more* Micro-Graphic panel.

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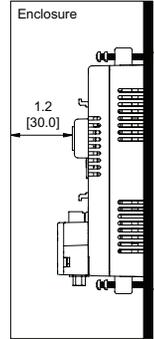


units: inches [mm]

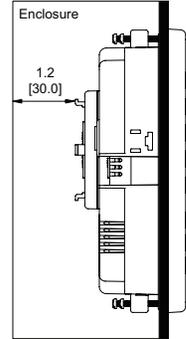
Rear View



Side view



**Side View with
EA-ADPTR-4**

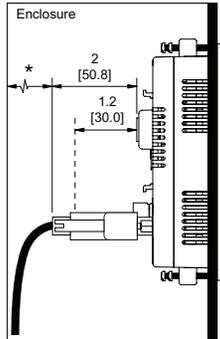


**EA1-T6CL with
EA-MG6-BZ2(P)**

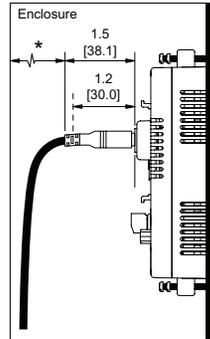


NOTE: Additional clearance inside the enclosure is required when connecting to the 15-pin serial communications port (Port2) unless the 90 EA-ADPTR-4 is used.

* Additional clearance for cable bend radius typically 1/2" to 1"



**Side View with
EA-2CBL**



**Side View with
USB programming
cable**



NOTE: Cable connectors are typically longer than 1.2" (30mm). Therefore, in addition to ventilation requirements, clearance must account for the connector and the cable bend radius.

Step 5 – Install the Programming Software and Develop a Project

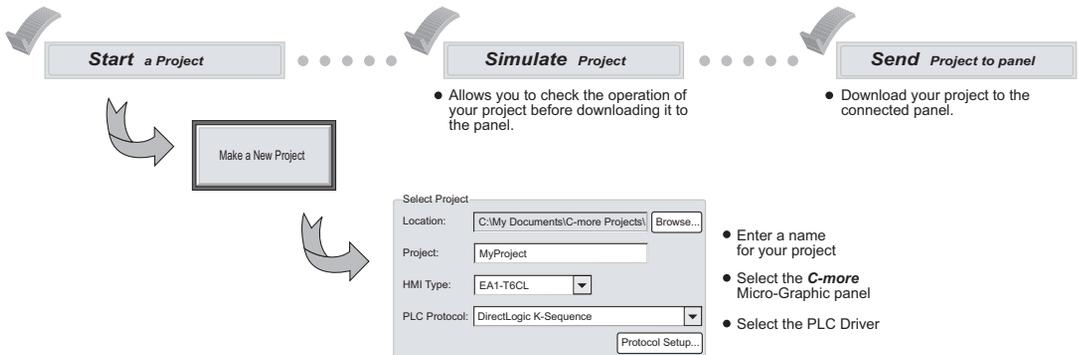
Following are the minimum system requirements for running *C-more* Micro-Graphic Programming Software, EA-MG-PGMSW, on a PC:

- Operating System - Windows® XP Home / Professional Edition Service Pack 2, Windows® 2000 with Service Pack 4, Windows® Vista (32 and 64 bit), Windows® 7 (32 and 64 bit), Windows 8 (32 and 64 bit)
- Keyboard and Mouse or compatible pointing device
- Super VGA color video adapter and monitor with at least 800 x 600 pixels resolution (1024 x 768 pixels recommended) 64K color minimum
- 150 MB free hard-disk space
- 128 MB free RAM (512 MB recommended); 512 MB free RAM (1GB recommended) for Vista
- CD-ROM or DVD drive for installing software from the CD, or internet access to download free programming software
- USB port for project transfer from software to touch panel

Insert the *C-more* Micro-Graphic Programming Software CD-ROM into the PC's CD-ROM drive or download the programming software from www.automationdirect.com and follow the instructions. If you need assistance during the software installation, please refer to the supplied Software Installation Guide or call the *AutomationDirect* Technical Support team at 770-844-4200.



NOTE: The panel has an internal USB to serial converter at Port1. When the device is properly installed and the USB programming cable connects the panel to the PLC, the port will be identified as a serial communications port with an assigned COM port number.



Step 6 – Connect *C-more* Color Micro-Graphic Panel to Computer

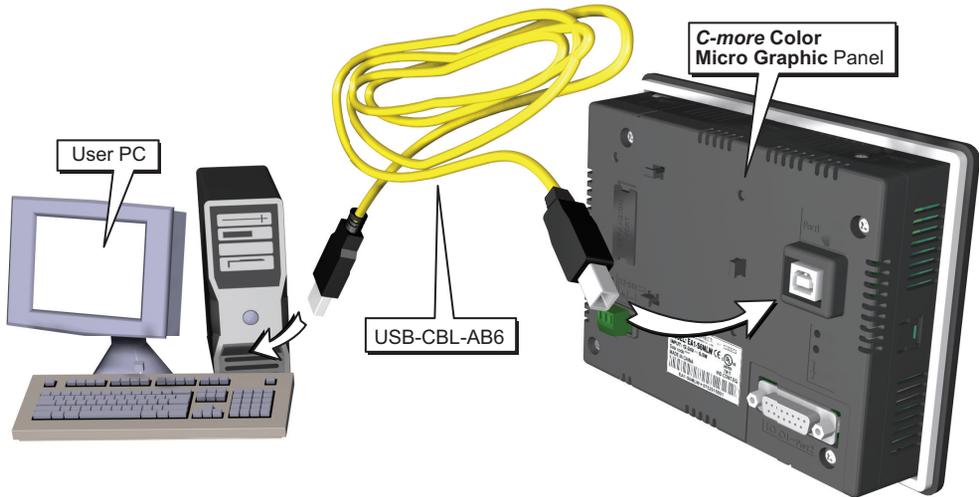
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NOTE: Install *C-more* Micro-Graphic Programming software before connecting the panel to the PC to ensure the panel drivers install correctly.

Use a programming cable such as USB-CBL-AB6 from a USB port type A on the project development PC to the USB port type B on the *C-more* Color Micro-Graphic Panel as shown below. Any standard Type A to Type B USB cable can be used such as a standard USB printer cable, maximum length 15'.

USB Programming Cable



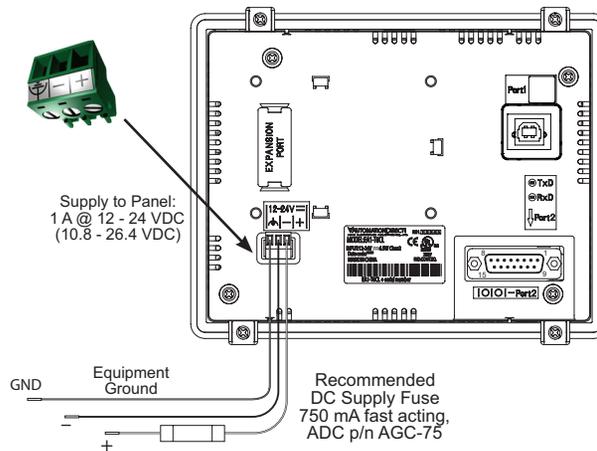
NOTE: When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in **Low-Power Mode**. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness.

Step 7 – Providing Power to the *C-more* Color Micro-Graphic Panel

Power can be supplied to the *C-more* Micro-Graphic panel in one of two different ways.

- 1). The panel is powered by a 1 Amp @ 12-24 VDC class 2 power source in normal operation.
- 2). The *C-more* Micro-Graphic panel can be powered during programming from the PC through a USB Programming Cable such as USB-CBL-AB6. When powered from the PC, the panel will operate in Low-Power mode and the screen brightness is diminished.

Panel Powered from a DC Power Source - Wiring Diagram



Tightening Torque

Power supply wire connection	1.7 lb-in (0.2 Nm)
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Required Wire Specification

Supported temperature	Over 60 °C
Wire Material	Copper
Wire Size	16 - 22 AWG



NOTE: Recommended DC power supply to power the *C-more* Micro Graphic Panel, **AutomationDirect** Part No. PSC-24-015 or PSC-24-030.

Step 8 – Accessing the C-more Color Micro-Graphic Panel Setup Screens

To access the Setup Menu of the panel's setup screens, press the the BAK [F1] and ENT [F5] function keys simultaneously for three (3) seconds.

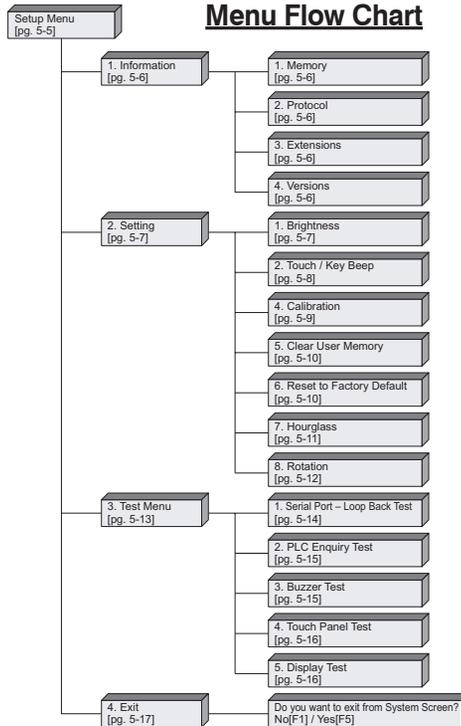
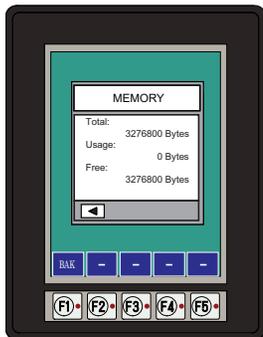
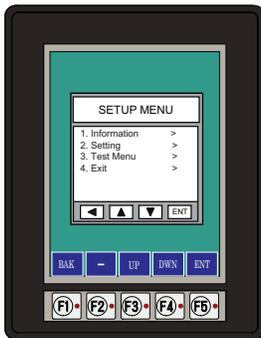
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From the Setup Menu, information about the panel can be obtained, settings can be adjusted, and panel functions can be tested.



NOTE: See Chapter 5: System Setup Screens for details on using the setup screen settings and functions.



Step 9 – Choose *C-more* Color Micro-Graphic Panel to PLC Protocol & CablesAvailable PLC Protocols

PLC Drivers	
<i>Serial - port2 only</i>	
AutomationDirect Productivity Series	Allen-Bradley DF1 Half Duplex
AutomationDirect CLICK	Allen-Bradley DF1 Full Duplex
AutomationDirect Do-more	Allen-Bradley PLC5 DF1
AutomationDirect K-sequence	Allen-Bradley DH485
AutomationDirect DirectNET	GE SNPX (90/30, 90/70, Micro 90, VersaMax Micro)
AutomationDirect Modbus	Mitsubishi FX
AutomationDirect SOLO	Mitsubishi (Q, QnA)
AutomationDirect GS Drives	Omron Host Link (C200 Adapter, C500)
Modicon Modbus RTU	Omron FINS Serial (CJ1, CS1)
Entivity Modbus RTU	Siemens PPI (S7-200 CPU)

Available purchased cables

Cable Description	Cable Part No.
<i>Cables used with serial Port2</i>	
AutomationDirect Productivity Series, Do-more, CLICK, Direct LOGIC PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 & H2-WinPLC (RS-232C)	EA-2CBL
Direct LOGIC (VGA Style) 15-pin port, DL06, D2-250 (250-1), D2-260 (RS-232C).	EA-2CBL-1
Direct LOGIC PLC RJ-11 port, D3-340 (RS-232C).	EA-3CBL
Direct LOGIC DL405 PLC 15-pin D-sub port, DL405 (RS-232C).	EA-4CBL-1
Direct LOGIC PLC 25-pin D-sub port, DL405, D3-350, DL305 DCU and all DCM's (RS-232C).	EA-4CBL-2
Allen-Bradley MicroLogix 1000, 1100, 1200, 1400 & 1500 (RS-232C)	EA-MLOGIX-CBL
Allen-Bradley SLC 5-03/04/05, ControlLogix, CompactLogix, FlexLogix DF1 port (RS-232C)	EA-SLC-232-CBL
Allen-Bradley PLC-5 DF1 port (RS-232C)	EA-PLC5-232-CBL
Allen-Bradley SLC 5-01/02/03, DH485 port	EA-DH485-CBL
GE 90/30, 90/70, Micro 90, Versamax Micro (Port2) 15-pin D-sub port (RS-422A)	EA-90-30-CBL
MITSUBISHI FX Series 25-pin port (RS-422A)	EA-MITSU-CBL
MITSUBISHI FX Series 8-pin mini-DIN (RS-422A)	EA-MITSU-CBL-1
OMRON Host Link (C200 Adapter, C500) (RS-232C)	EA-OMRON-CBL



NOTE: See Chapter 6: PLC Communications for a detailed chart of PLC compatibility & cable connections. Chapter 6 includes wiring diagrams for end user construction of certain cables.

Step 10 – Connect *C-more* Color Micro-Graphic Panel to PLC

Connect the serial communications cable between the *C-more* Micro-Graphic panel and the PLC. The panel can be connected to the PLC via the panel's built-in 15-pin serial communications port with either RS-232, RS-422 or RS-485 communications.

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